International Association of Transportation Regulators (IATR) Conference [2006]

Tuesday, September 19, 2006 8:30 a.m. – 10:15 a.m.
Session 5 – Gathering Operating Statistics
Tuesday, September 19, 2006 10:30 a.m. - 12:00 noon
Establishing Rates Using Operating Statistics

COLLECTION AND USE OF INFORMATION FOR EFFECTIVE REGULATION OF THE TAXICAB INDUSTRY

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SUMMARY. Effective regulation is cost effective, supports the goals of regulation, and has measurable results. The role of information is central to effective regulation. Information helps identify problems, plan solutions, track progress, and assess effectiveness of regulation. Factors to consider when collecting information include its availability, quality and usefulness. Information is available from many sources starting with taxicab industry records and records maintained by taxicab regulatory officials but also including publications and web sites produced by government and non-government organizations. There are several types of information that are useful in designing and implementing effective regulatory programs. Examples include regulatory activity summaries; taxicab industry revenue, cost and operating statistics; passenger complaints and surveys; and published information on consumer price indices and average fuel prices. Of course, the information clearinghouse function of the IATR is a valuable source of information as well – especially through networking with other members. Some of the principal uses of information in making taxicab regulation more effective are cost-benefit analysis, measures of effectiveness, projecting trends, improving licensing standards for drivers and taxicabs, and improving training. A major consideration in deciding which information to collect is cost. Some of these costs are form design and printing, database development, data collection, data entry, and reporting. There are many limitations of information and the regulator has to be aware of them. Some limitations include counting problems, data entry errors, incompleteness, and inaccuracy. This paper examines some examples of the collection and use of information to improve the effectiveness of taxicab regulation including taximeter revenue and operating statistics.

DISCLAIMER. This presentation was written by Craig Leisy of the Consumer Affairs Unit in Seattle, WA to promote discussion of this important issue among taxicab regulators at the annual conference of the International Association of Transportation Regulators (IATR) in Seattle, Washington during September 2006. He is solely responsible for any errors that it may contain. The presentation does not represent the views of the City of Seattle.

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INTRODUCTION

An email survey was conducted for this IATR conference in order to identify what kinds of information officials currently use to administer taxicab regulatory programs. The returns were limited but the results were, nevertheless, illustrative of the need for regulatory officials to place more emphasis on information collection.[2] Everyone will agree that good decisions depend upon good information but information collection remains problematic. Why is this? It is probably due, more than anything else, to limited resources – taxicab regulatory program staffs and budgets are generally small. Additionally, staff may not know how to collect or use information or even what information is important. This paper addresses the basics of information collection and use for effective taxicab industry regulation.

GOALS OF REGULATION

The goals of taxicab industry regulatory programs are normally: (1) safety, (2) service, (3) economics, and (4) public policy. "Safety" includes both safe driving and driver personal safety. Safe driving is regulated through taxicab driver licensing (e.g., driving records), driver training (e.g., National Safety Council Defensive Driving Course), and vehicle standards (e.g., maximum vehicle age, periodic mechanical inspections by certified technicians, regular safety inspections by taxicab inspectors), and taxicab insurance coverages and limits. Driver personal safety is often regulated by safety equipment (e.g., partitions, security cameras, monitored silent alarms with GPS) and driver training (e.g., risk factors for crimes against taxicab drivers, emergency procedures, and use of safety equipment). "Service" refers to passenger service (e.g., average service response times, passenger complaint resolution, lost-and-found, and wheelchair accessibility). "Economics" pertains to entry (e.g., issuance of new taxicab licenses, conditions on licenses – nontransferable, temporary, wheelchair, green taxicab) and rates (e.g., taximeter rates and extras, flat rates, temporary surcharges, special rates, and contract rates). Nearly all large cities regulate entry and rates to assure a healthy and dependable taxicab industry which is an indispensable part of intercity public transportation systems. Finally, "public policy" refers government goals that are imposed on taxicab industry for the public good in return for the privilege of holding licenses to operate. Some public policy goals could relate to the environment (e.g., green taxicabs), assisting the disabled (e.g., wheelchair accessible taxicabs), or protecting taxicab drivers from exploitation (e.g., lease regulation).

[2] Responses were received from Atlanta, Calgary, Miami-Dade County, New York, Seattle, Toronto, and Winnipeg. Many types of information were collected by just a few cities: average taxicab service response time (1), taxicab collisions (1), taximeter fare revenue (2), and revenue trips (2). Other information was more widely collected: average fuel costs (6) and passenger complaints (6).

EFFECTIVE REGULATION

All regulatory agencies are generally tasked with demonstrating that their activities are effective. Ineffective regulation not only wastes government funds but also presents unnecessary costs to the taxicab industry. In order to be effective, regulatory activities should: (1) support the goals of regulation, (2) have measurable results, and (3) be cost effective. The goals of regulation have already been discussed. New laws or rules should clearly support one or more of the stated goals. Every activity by a taxicab industry regulatory agency should have measurable results. For example, installation of new safety equipment in taxicabs should result in a reduction in crimes against drivers; English skills testing for drivers should result in fewer passenger complaints related to communication; and stiffer fines or additional street enforcement activity should decrease driver noncompliance (e.g., dirty taxicabs, incomplete trip sheets, short trip refusals). Trends in data will indicate whether these regulatory activities are effective or not. Cost effectiveness is a separate matter and relates both to efficiency of enforcement by regulators and minimizing the cost of compliance by industry. For example, it would be cost prohibitive for many regulators to have taxicab inspectors conducting street enforcement work 24X7 all over the city so they generally rely on random shifts and unannounced inspections. Also, the taxicab industry should not be required to purchase large numbers of vehicles equipped to be accessible for wheelchairs if the amount of trips by passengers in wheelchairs is small.

ROLES OF INFORMATION

Information aids the regulatory officials in identifying problems, planning solutions, tracking progress in the implementation of solutions, and assessing the effectiveness of solutions in solving problems. Problems are usually identified through regulatory activity such as taxicab inspections and street enforcement although some problems become apparent during licensing activities and through passenger complaints. The number of failed inspections, violations cited or passenger complaints helps show trends. Normally, information is available on the type of violation or the type of complaint which permits regulators to more narrowly define the problem. For instance, an increase in the number of passenger complaints about difficulty communicating with drivers (e.g., directions, questions) may indicate a problem with the verbal English skills of drivers. Planning solutions requires information about the scope and size of the problem and the resources and methods available to address it. For example, a growing trend in short trips refusals by drivers may be concentrated at a few taxicab zones so requiring taxicab company superintendents to supervise these zones during the time of day when the complaints are most prevalent may be more effective than increasing fines for short trip refusal violations because taxicab inspectors rarely witness these violations. Additionally, the inconvenience and cost to the taxicab companies of providing superintendents may make them more willing to refuse to lease taxicabs to drivers who are the subject of repeated passenger complaints. Tracking

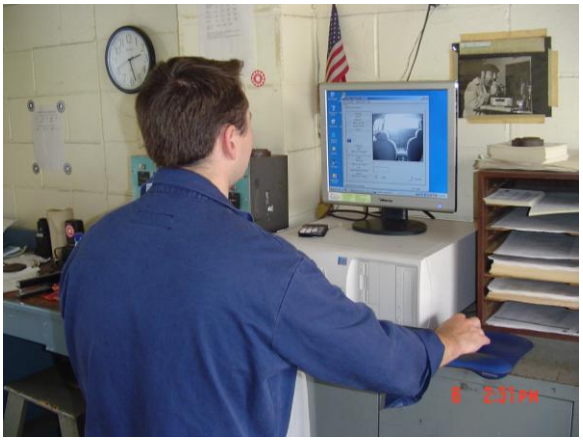
progress usually means monitoring the implementation of solutions. Most new ordinance requirements have compliance dates. If the taxicab industry is required to install security camera systems or receipt-issuing taximeters, the regulatory officials must establish data collection systems to record satisfactory inspections and tests of these new equipment installations to make certain that all taxicabs are in compliance or cited for violations. Assessing effectiveness of regulatory initiatives designed to solve problems is often accomplished using the same information that alerted the regulator that there was a problem. For example, the number of passenger complaints about short trip refusals should decline after taxicab company superintendents are assigned to trouble spots. If not, then additional or alternative enforcement activity is needed.

COLLECTING INFORMATION

Collecting information to aid in effective regulation must be a deliberate process. Some reporting requirements can be an unnecessary burden and cost to the taxicab industry. As a result, only information needed to accomplish the goals of regulation should be sought from the taxicab industry. Considerations for collecting information should include the availability of the information, the quality of the information and the usefulness of the information. Frequently, reliable information is simply not available. Sometimes, the reason is that the information is not collected but, more often, there is no method of collection that provides complete or accurate results. For example, taxicab companies employing computer dispatch can provide high quality information on dispatched trips but cannot accurately report non-dispatched trips. Driver trip sheets could be sampled to try to provide the missing information on non-dispatched trips but trip sheets, as a rule, are notoriously unreliable. The quality of information is very important. Even if information is available, if the quality is poor, it should not be relied on to make decisions. The quality of information is often a function of its source. Trip sheets are completed by drivers who may not want a complete record of their revenue so they deliberately leave out trips – especially non-dispatched trips. Any records that is not produced by the regulatory program or that cannot be corroborated by information from another source may be of doubtful quality. The usefulness of information relates to whether it *directly* measures something. For example, a count of passenger complaints about slow response may not be particularly useful. The slow responses could be occurring primarily during rush hours and therefore due to traffic congestion – something that the taxicab industry and the regulator cannot fix. Or, the slow responses could be the result of downtown events (e.g., football game crowds, parades) and similarly unavoidable. More useful information would be trends in average service response times for dispatched trips for the entire city and over an extended period of time. This information, used in conjunction with taximeter revenue and operating statistics (e.g., is the time charge amount increasing?) would indicate whether the increasing response times were due to worsening traffic or a shortage of taxicabs.

SOURCES OF INFORMATION

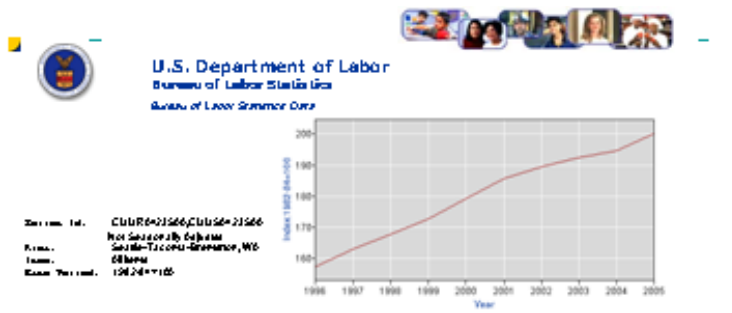
The obvious sources of information are regulatory records kept in connection with taxicab licensing, inspection and street enforcement activities. These are primarily activity reports which measure how many licenses were issued or denied, how many inspections were conducted and failed, or how many passenger complaints were received. More useful information is often available by sorting the details. For example, what inspection deficiencies were noted during failed inspections or what types of passenger complaints were reported and what are the trends in this data over time? The records maintained by regulators are most often related to the safety, service or public policy goals of regulation. The taxicab industry is the source of many records that deal with the economics of regulation. For instance, the taxicab dispatch computer retains records of individual dispatched trips and can report average service response times. Taximeter totalizers capture revenue and operating statistics. Driver trip sheets show numbers of passengers and record the origin and destination of non-dispatched trips. Some regulators conduct surveys of taxicab passengers for feedback on service quality. Sometimes comment cards are also used but the most used information is derived from passenger complaints. Finally, there are many sources of information available outside the taxicab industry that are useful in making decisions. For example, the AAA web site tracks the average daily price of gasoline which is needed to determine whether a fuel surcharge should be implemented and what amount it should be. The Bureau of Labor Statistics (BLS) in the U. S. Department of Labor publishes information on the consumer price index (CPI) which aids regulators in determining whether an inflation adjustment to the taximeter rate is needed and how much. Of course, the IATR is a great source of information through networking with other regulators to see how they have solved the same problems. The proceedings of annual IATR conferences are published and are an excellent reference. And, the Taxi, Limousine and Paratransit Association (TLPA) publishes a magazine as well as special reports.



USES OF INFORMATION

There are numerous uses for information in an effective regulatory program. These include cost-benefit analysis, measures of effectiveness, projecting trends, improving licensing standards for taxicabs and drivers, improving new driver training, and informing the public through news releases or web site postings. Before a law or rule is drafted, there should normally be an effort to compare the costs and benefits of the proposed new requirement. At the very least, the benefits should exceed the costs. In other words, the cure shouldn't be worse than the disease. Comparisons are difficult because often the costs are in dollars and the benefits are measured by improved driver safety (e.g., fewer crimes against drivers) or better customer service (e.g.,

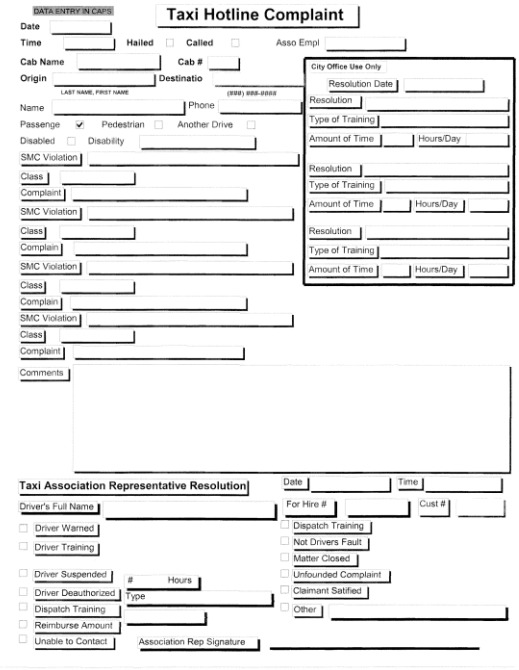
reduction in a specific type of passenger complaint). There are costs that may diminish the effectiveness of the regulatory program as well. For instance, new tasks take resources away from other regulatory responsibilities unless there is additional staffing. In the end, the cost-benefit analysis is more of a subjective balancing of the two to see if the benefits justify the costs involved. Measures of effectiveness (MOE) are crucial to assessing whether new requirements are accomplishing their purposes. Decision making without follow up use of MOE not good program management. Often, regulators include the MOE in annual reports to elected officials. Typically, MOEs such as counts of passenger complaints, violations cited, or inspections failed, are monitored both before and after a new requirement is implemented. Noncompliance should decline over time but the level of enforcement has a big impact on the rate of decrease. Current trends may be extrapolated to predict future conditions. This information is helpful in scheduling work or planning budgets. A growth in vehicle collisions, despite the introduction of a new defensive driving module in the new driver training course may indicate a need to tighten up driving record standards for licensing. Finally, it is important that the public be apprised of planned temporary fuel surcharges or taximeter rate hikes.



Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	HALF1	HALF2
1996													157.5	155.6	159.4
1997												165.0	163.0	161.9	164.1
1998		166.5		166.4		167.5		169.5		169.3		169.4	167.7	166.6	168.9
1999		170.6		172.2		172.7		173.4		174.7		174.4	172.8	171.6	174.0
2000		176.1		177.8		179.2		180.3		182.1		181.5	179.2	177.3	181.1
2001		184.0		184.2		185.3		185.8		187.9		186.1	185.7	184.4	186.9
2002		187.6		188.8		189.4		190.3		190.9		190.0	189.3	188.3	190.3
2003		191.3		192.3		191.7		194.4		193.7		191.8	192.3	191.6	193.1
2004		193.5		194.3		195.3		194.6		196.5		195.1	194.7	194.0	195.4
2005		197.6		201.3		199.8		199.9		203.3		200.9	200.2	199.2	201.3
2006		203.6		207.4		208.2								205.8	

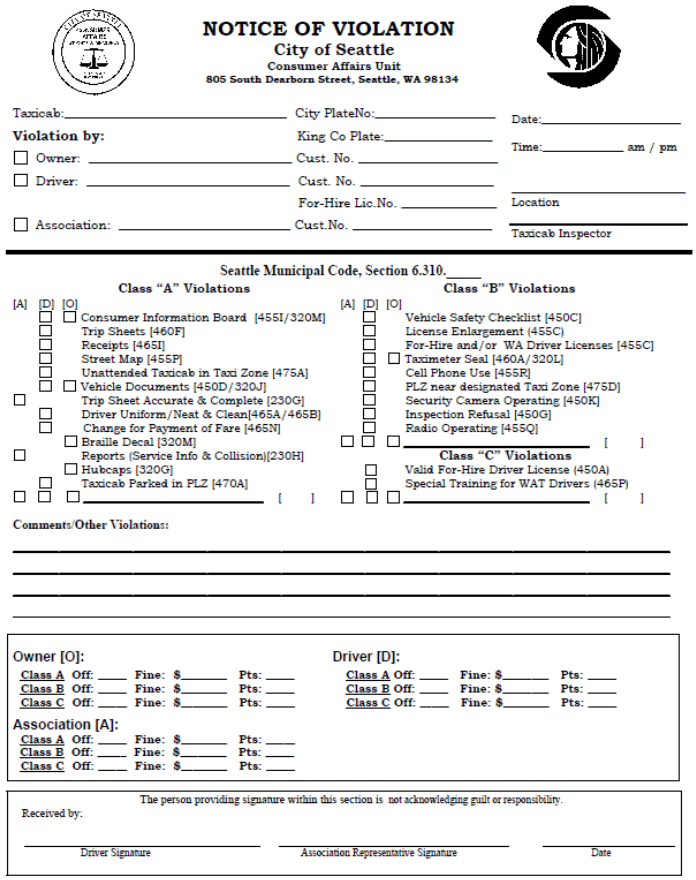
INFORMATION COSTS

There are some out-of-pocket costs as well as opportunity costs of collecting or using any information. The out-of-pocket costs are related to form printing and database development. Opportunity costs are incurred when regulatory agency staff are diverted from other tasks to perform new data entry or filing. Many types of information may be summed or averaged using any spreadsheet or database software. The costs of collecting or using information can be significant when compared with the limited resources available to most regulators. Most of the same costs apply to the taxicab industry when they are required to collect information and submit reports to the regulator.



LIMITATIONS OF INFORMATION

There are problems with collecting and processing any information that make it less reliable. These include: counting problems, data entry errors, incomplete data, and inaccurate information. Counting problems refer to any data collection difficulties that affect its reliability. For example, total revenue trips can't be reported by computer dispatch records because non-dispatched trips are not counted. Also, total revenue trips recorded by taximeter totalizers onit flat rate trips and add some nonexistent trips (e.g., the "soon to clear" function is often used inappropriately - when there are no passengers non board). Data entry errors are commonplace and data "clean up" only spots obvious errors. Entries that appear very unusual should normally be excluded from databases so they don't introduce errors that skew statistics. The biggest problem with data is generally that it is incomplete. This means that averages are used instead of totals or totals must be projected from samples. For example, taximeter totalizer readings cannot be used if the vehicle or taximeter have been changed so usable data sets are frequently limited to fewer than half the licensed taxicabs. Problems with inaccurate data are typically more common in manual records like driver trip sheets. Automated records, like computer dispatch information, don't have mistakes due to human error.



NOTICE OF VIOLATION
City of Seattle
Consumer Affairs Unit
805 South Dearborn Street, Seattle, WA 98134

Taxicab:_____ City PlateNo:_____ Date:_____
Violation by: King Co Plate:_____ Time:_____ am / pm
☐ Owner: _____ Cust. No. _____
☐ Driver: _____ Cust. No. _____ _____
For-Hire Lic.No. _____ Location
☐ Association: _____ Cust.No. _____ _____
Taxicab Inspector

Seattle Municipal Code, Section 6.310.____

Class "A" Violations

[A] [D] [O]
☐ ☐ Consumer Information Board [455I/320M]
☐ Trip Sheets [460F]
☐ Receipts [465I]
☐ Street Map [455F]
☐ Unattended Taxicab in Taxi Zone [475A]
☐ ☐ Vehicle Documents [450D/320J]
☐ Trip Sheet Accurate & Complete [230G]
☐ Driver Uniform/Neat & Clean[465A/465B]
☐ Change for Payment of Fare [465N]
☐ Braille Decal [320M]
☐ Reports (Service Info & Collision)[230H]
☐ Hubcaps [320G]
☐ Taxicab Parked in PLZ [470A]
☐ ☐ ☐ _____ [ ]

Class "B" Violations

[A] [D] [O]
☐ Vehicle Safety Checklist [450C]
☐ License Enlargement [455C]
☐ For-Hire and/or WA Driver Licenses [455C]
☐ ☐ Taximeter Seal [460A/320L]
☐ Cell Phone Use [455R]
☐ PLZ near designated Taxi Zone [475D]
☐ Security Camera Operating [450K]
☐ Inspection Refusal [450G]
☐ Radio Operating [455Q]
☐ ☐ ☐ _____ [ ]

Class "C" Violations

☐ Valid For-Hire Driver License (450A)
☐ Special Training for WAT Drivers (465P)
☐ ☐ ☐ _____ [ ]

Comments/Other Violations:

_____
_____
_____
_____

Owner [O]:
Class A Off: ____ Fine: $_____ Pts: ____
Class B Off: ____ Fine: $_____ Pts: ____
Class C Off: ____ Fine: $_____ Pts: ____

Driver [D]:
Class A Off: ____ Fine: $_____ Pts: ____
Class B Off: ____ Fine: $_____ Pts: ____
Class C Off: ____ Fine: $_____ Pts: ____

Association [A]:
Class A Off: ____ Fine: $_____ Pts: ____
Class B Off: ____ Fine: $_____ Pts: ____
Class C Off: ____ Fine: $_____ Pts: ____

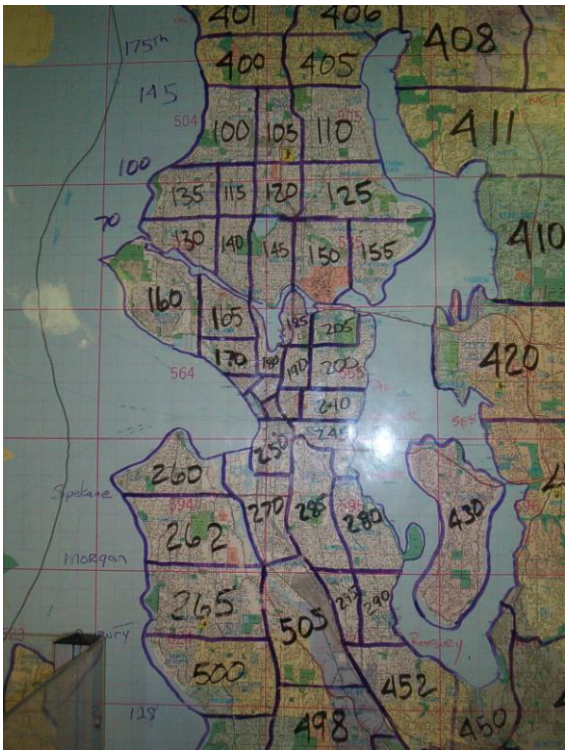
The person providing signature within this section is not acknowledging guilt or responsibility.
Received by:
_____ _____ _____
Driver Signature Association Representative Signature Date

INFORMATION COLLECTION: TAXIMETER STATISTICS

Few regulators collect taximeter statistics. Perhaps it is too laborious. To some extent, the failure to collect these statistics may be because taximeter testing is performed by weights and measures officials. However, taximeters can be the source of some of the most valuable information about taxicab industry revenue and operating statistics. Taximeters are designed to record total miles, revenue miles revenue trips, and fare revenue. This information is accessible in a few moments following procedures contained in the National Conference on Weights and Measures (NCWM) certificate of conformance (CC) for each taximeter model. The CC are posted on the NCWM web site under the National Type Evaluation Program (NTEP).[3] Two totalizer readings are compared and the difference divided by the number of days between readings in order to compute average daily figures. These daily figures may be "annualized" by

[3] www.ncwm.net/ntep

multiplying them by 365 days. Finally, total figures for the entire taxicab industry may be estimated by assuming annual averages for the sample are typical for the industry and there is no seasonal changes. The advantages of obtaining operating statistics from taximeters rather than driver trip sheets or computer dispatch records are several: (1) taximeter totalizers automatically sum the operating statistics while trip sheet depend on written entries by drivers; (2) taximeter totalizers count operating statistics for all trips (when the taximeter is "on") but computer dispatch records only show dispatched trips; and (3) taximeter totalizers provide information directly to the regulator without burdening the taxicab industry with reporting requirements. The principal disadvantage of using taximeter statistics relates to the fact that the annual and average data derived from the statistics are based upon non-random samples and assumptions that the averages are typical across the entire taxicab industry.



INFORMATION USE: TAXIMETER STATISTICS

Taximeter statistics can provide an unexpected range of information including reasonable approximations of the following: average annual fare revenue per taxicab or per shift (driver); average trip distance and taximeter fare; percentage of deadhead (non-revenue) miles; average annual fuel costs per shift; and average revenue trips per shift. The revenue information is especially helpful in estimating driver annual income. Trends in driver revenue are very significant when regulators are evaluating the need for a taximeter rate increase. After all, the inflation rate may be raising driver costs but growing demand for taxicab services may be increasing driver revenue at a faster rate. Trends in average time charge per trip are particularly useful in determining whether rising average service response times are due to worsening traffic or increasing demand. If average time charges remain constant then traffic may be discounted. An increase in demand may not necessarily raise average response times unless the taxicab industry has no unused capacity. If both the average service response times and average trips per shift are increasing it may be that

Centrodyne Corp. of America
Taximeter
Models: Silent 600 Series

Certificate Number: 93-128A5
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Operation: Models Silent 610 and Silent 620 are operated using four (4) push buttons on the face of the taximeter.
The key function in each mode is as follows:
Key STATS VACANT HIRED TIME-OFF
1- Hired no function go hired no function go to vacant
2- Time off print stats print receipt go time-off go to time-on
3- Extras increment stats go to stats add extras sum fare and extras
4- Rate used as line feed, if printer present used to select rate no function no function
The totals of a vehicle's operation may be recalled by pressing the Extras key when the taximeter is in Vacant mode. The displays are as follows:

1- Total fare $ 2-Total extras $ 3- Total vehicle miles 4- Total paid miles 5- Total trips

Model Silent 610 RDM utilizes a LCD display manufactured by DDS. The taximeter's display occupies a 4.53 inch x 1.32 inch area of this display. The taximeter's operation is controlled by six switch functions, selectable from the display/keypad unit. **The F6 key displays the taximeter's selectable menu**. This taximeter menu must be displayed to operate the taximeter.

the regulator should consider issuing additional taxicab licenses. Driver costs – generally the taxicab lease, fuel costs, and cashier charges – are well known so taximeter revenue information allows the regulator to estimate average driver income. However, revenue per taxicab cannot accurately be converted to revenue per driver without reliable information about the average number of shifts per taxicab and the average number of shifts per driver per year.

OTHER INFORMATION: COLLECTION AND USE

FUEL SURCHARGE

GASOLINE PRICE	TRIP SURCHARGE
$1.90	None
2.40	$0.50
2.90	1.00
3.40	1.50
3.90	2.00
4.40	2.50
4.90	3.00

NOTES: (1) Assumes $1.90 base price. If the taximeter rate is changed, this table will be adjusted with a new base price. (2) Surcharge assumes average paid trip length is 5 miles and fuel consumption is 10 miles per gallon. Fuel use per round trip is 1 gallon. (3) Fuel price is for regular unleaded gasoline as reported by the American Automobile Association Daily Fuel Gauge Report [www.fuelgaugereport.com/WAmetro.asp].

There are too many potential uses of taximeter statistics to fully discuss here. However, a few more examples should illustrate the diversity of information that is possible. Not surprisingly, since taxicabs usually operate 24X7 and in adverse weather or traffic conditions, there are a large number of vehicle collisions and many include injuries. Trends of annual total vehicle collisions may be used as a measure of effectiveness to assess the efficacy of regulatory initiatives to improve driver and passenger safety – a goal of taxicab industry regulation. These initiatives could include the use of a new driver safety course as part of new driver training or the tightening up of the driving record standard for issuance of taxicab driver licenses. At present, very few regulators collect information on vehicle collisions. Another example of information use is taxicab crime statistics. Trends in police department records of assaults and robberies against taxicab drivers may be used to evaluate the need for taxicab safety equipment or improved driver personal safety training or, alternatively, as a measure of effectiveness of the efficacy of these initiatives after they have been implemented. Police databases seldom tag crimes involving taxicabs so this may complicate the collection of information. Comparison of police statistics with the results of driver surveys on crime will indicate whether crime reporting by drivers is a problem. It is often supposed that many crimes against taxicab drivers aren't reported to the police because drivers don't want to waste their shift with a police investigation. Passenger complaints provide important information on service problems. However, sometimes complaints must be carefully scrutinized to determine whether there may be other factors involved. For example, passenger complaints about slow response times may not be meaningful if the passengers were waiting during rush hours.

YEAR	TOTAL CRIMES 1/	CLEARANCE RATE 2/
2000	**61**	**15/61 (25%)**
2001	**75**	**29/75 (38%)**
2002	**61**	**16/61 (26%)**
2003	**65**	**16/65 (25%)**

Notes: 1/ Total crimes includes taxicab drivers as either victims or suspects: 2000 – 50 victims/11 suspects, 2001 – 57/18, 2002 – 43/18, 2003 – 56/9. 2/ Clearance rate is the percent of crimes where an arrest is made (does not refer to convictions).

CONCLUSION

Decision making without good information is not compatible with effective regulation of the taxicab industry. Information should only be given weight equal to its accuracy and completeness. It is best to try to corroborate information from one source with another, independent source. Information collection and use is the essence of regulatory work – from identifying problems and planning how to correct them to following up to evaluate the effectiveness of steps taken. Collection and use of information requires the regulator to invest scarce resources in activities other than the daily licensing, inspection and street enforcement workload but it is absolutely necessary.